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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/716,885	11/20/2000	Rumo Satake	SEL 229	1074

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EXAMINER	
LEWIS, DAVID LEE	

ART UNIT	PAPER NUMBER
2629	

DATE MAILED: 07/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/716,885	SATAKE, RUMO	
	Examiner	Art Unit	
	David L. Lewis	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/117/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-5, 17-18, 26, 27, and 35-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Hartmann (4976515).

As in claim 1, Hartmann teaches of a method of driving a liquid crystal display device, **figure 3a,**

said liquid crystal display device including: an orientation film over a substrate, **figure I item 6;**

and a liquid crystal material over orientation film, **figure 1 item 2,**

said liquid crystal material over the orientation film, said liquid crystal material having a chiral smectic phase, **column 3 lines 20-25,**

wherein a brightness of said liquid crystal material increases monotonically according to a voltage value applied to said liquid crystal material, **figure 3a and 3b**,

said method comprising the steps of: displaying a black level by the liquid crystal material in a first period, **figure 3a item Vbl, figure 4b wherein -6V < Vbl < OV**;

applying a voltage to the liquid crystal material for a gradation display in a second period, wherein the second period comes before or after the first period**, figure 3a item Vl or V2.**

As in claim 2, Hartmann teaches of a method of driving a liquid crystal display device, said liquid crystal display device including: an orientation film over a substrate, **figure l item 6**;

and a liquid crystal material over the orientation film, **figure 1 item 2**,

said liquid crystal material over the orientation film, said liquid crystal material having a chiral smectic phase, **column 3 lines 20-25**,

wherein a brightness of said liquid crystal material increases monotonically according to a voltage value applied to said liquid crystal, **figure 3a and 3b**,

said method comprising the steps of: canceling out a spontaneous polarization of the liquid crystal material in a first period, **figure 3a item Vbl, figure 4b wherein -6V < Vbl < OV**;

and applying a voltage to the liquid crystal material for a gradation display in a second period, wherein the second period comes before or after the first period, **figure 3a item Vl or V2**.

As in claim 3, Hartmann teaches of a method of driving a liquid crystal display device: said liquid crystal display device including: an orientation film over a substrate, **figure 1 item 6**;

and a liquid crystal material over the orientation film, **figure 1 item 2**,

said liquid crystal material having a chiral smectic phase, **column 3 lines 20-25**,

wherein a brightness of said liquid crystal material increases monotonically according to a voltage value applied to said liquid crystal, **figure 3a and 3b**,

said method comprising the steps of: applying a voltage of OV to the liquid crystal material, **figure 3a item Vbl, figure 4b wherein -6V < Vbl < OV**;

and applying a voltage to the liquid crystal material for a gradation display in a second period, wherein the second period comes before or after the first period, **figure 3a item V1 or V2**.

As in claims 4, 17, and 26, Hartmann teaches of, wherein a plurality of active elements are formed over the substrate, figure 2a item 15.

As in claims 5, 18, and 27, Hartmann teaches of, wherein each of the plurality of active elements applies a voltage to the liquid crystal material, and wherein the voltage has an upper limit, figure 3a item Vd.

As in claims 35-37, Hartmann teaches of said liquid crystal material being driven by active matrix driving, figure 2a and 7.

As in claim 38, Hartmann teaches of wherein said black level is displayed by applying a voltage of OV to the liquid crystal material, figure 3a item Vbl, figure 4b wherein -6V < Vb1 < OV.

As in claim 39-41, Hartmann teaches wherein a quantity of light changes by changing a values of a voltage, figure 4b.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 7-9, 11, 14, 16, 20-22, 24, 25, 29-31, 33, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann (4976515) in view of Saishu et at. (6069600).

As in claims 7-9, 16, 20-22, 25, 29-31, and 34, Hartmann teaches of the invention as applied to claims 1-3 and 12, however Hartmann is silent as to said combination of varying spontaneous polarization of the liquid crystal material being of a specific value and orientation film thickness.

Saishu et al. teaches of varying spontaneous polarization of the liquid crystal material, column 9 lines 15-25, column 12 lines 55-60, further wherein said varying orientation film thickness would have been an obvious design choice in view of the range of values suggested by Saishu, further wherein said thickness values also represent obvious design choice thickness values available to the skilled artisan.

As in claims 11, 24, and 33, Saishu et al. teaches of the auxiliary capacitor well known in the art that Hartmann implies, column 9 lines 15-25, column 12 lines 55-60.

Therefore it would have been obvious to the skilled artisan at the time of the invention to adapt said varying polarization and thickness values as suggested by Saishu in the device as suggested by Yang because both Yang and Saishu teaches of a drive technique for a passive and active matrix type liquid crystal display, as found in the above claims.

3. Claims 6, 19, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartman (4976515).

As in claims 6, 19, and 28, Hartman teaches of, wherein the upper limit of the voltage has an absolute value of 7 V or less, figure 4a item Vd=6v, wherein 6v is sufficiently close to 7v and would have been an obvious design choice.

4. Claims 10, 23, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartman (4976515) in view of Verhulst (6069604).

As in claims 10, 23, and 32, Hartmann is silent as to voltages having an opposite polarity and same value. **Verhulst teaches the** display as taught by Hartman can vary

the signal applied to Vcom, figure 8b, wherein the result is having voltages of an opposite polarity and same value as claimed is produced.

As in claims 10, 23, and 32, Hartmann in view of Verhulst teaches of, wherein a first response time is defined as a response time of the liquid crystal material between a first voltage and a second voltage having an opposite polarity to the first voltage not via a voltage of OV, figure 3a item Vbl and V2, wherein a second response time is defined as a response time of the liquid crystal material between a first voltage and a second voltage having an opposite polarity to the first voltage via the voltage of OV', wherein the second response time is five times or more as short as the first response time, figure 3a item V2 and Vbl, wherein the inclusion of a varying Veom would further produce blanking and data pulses of opposite polarity, via and not via OV's, as claimed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 10, 17-18, 23, 26-27, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Nito et al. (5214523).

As in claim 1, Nito et al. teaches of a method of driving a liquid crystal display device, said liquid crystal display device including: an orientation film over a substrate, **column 3 lines 52-67, column 7 lines 30-45**;

said liquid crystal material over the orientation film, said liquid crystal material having a chiral smectic phase, **column 3 lines 5-10**,

wherein a brightness of said liquid crystal material increases monotonically according to a voltage value applied to said liquid crystal material, **column 8 lines 63-67, column 9 lines 1-40**,

said method comprising the steps of: displaying a black level by the liquid crystal material in a first period, **figure 9a & b**;

applying a voltage to the liquid crystal material for a gradation display in a second period, wherein the second period comes before or after the first period, **figure 9a & b, column 9 lines 1-40.**

As in claim 2, Nito et al. teaches of a method of driving a liquid crystal display device, said liquid crystal display device including: an orientation film over a substrate, **column 3 lines 52-67, column 7 lines 30-45**;

said liquid crystal material over the orientation film, said liquid crystal material having a chiral smectic phase, **column 3 lines 5-10**,

wherein a brightness of said liquid crystal material increases monotonically according to a voltage value applied to said liquid crystal, **column 8 lines 63-67, column 9 lines 1-40**,

said method comprising the steps of: canceling out a spontaneous polarization of the liquid crystal material in a first period, **figure 9a & b, column 9 lines 1-40**;

and applying a voltage to the liquid crystal material for a gradation display in a second period, wherein the second period comes before or after the first period, **figure 9a & b, column 9 lines 1-40**.

As in claim 3, Nito et al. teaches of a method of driving a liquid crystal display device: said liquid crystal display device including: an orientation film over a substrate, **column 3 lines 52-67, column 7 lines 30-45**;

and a liquid crystal material over the orientation film, said liquid crystal material having a chiral smectic phase, **column 3 lines 5-10**,

wherein a brightness of said liquid crystal material increases monotonically according to a voltage value applied to said liquid crystal, **column 8 lines 63-67, column 9 lines 1-40**,

said method comprising the steps of: applying a voltage of OV to the liquid crystal material, **figure 9a & b, column 9 lines 1-40**;

and applying a voltage to the liquid crystal material for a gradation display in a second period, wherein the second period comes before or after the first period, **figure 9a & b, column 9 lines 1-40**.

As in claims 4, 17, and 26, Nito teaches of, wherein a plurality of active elements are formed over the substrate, column 9 lines 55-63.

As in claims 5, 18, and 27, Nito teaches of, wherein each of the plurality of active elements applies a voltage to the liquid crystal material, column 9 lines 55-63, and wherein the voltage has an upper limit, column 9 lines 25-40.

As in claims 35-37, Nito teaches of said liquid crystal material being driven by active matrix driving, column 9 lines 55-63.

As in claim 38, Nito teaches of wherein said black level is displayed by applying a voltage of OV to the liquid crystal material, figure 9a&b.

As in claim 39-41, Nito teaches wherein a quantity of light changes by changing a values of a voltage, column 9 lines 10-40, figure 9a&b.

As in claims 10, 23, and 32, Nito teaches voltages having an opposite polarity and same value, figure 9a&b.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nito et al. (5214523) in view of Yamamoto et al. (5617229) and Kogushi et al. (5598284).

As in claim 12, Nito et al. teaches of a method of driving a liquid crystal display device, said liquid crystal display device including: a plurality of thin film transistors being provided over a substrate, **column 9 lines 55-68**;

an orientation film over each of the plurality of thin film transistors, **column 3 lines 52-67, column 7 lines 30-45**;

and said liquid crystal material over the orientation film, said liquid crystal material having a spontaneous polarization, **column 3 lines 5-10,**

wherein a brightness of said liquid crystal material increases monotonically according to a voltage value applied to said liquid crystal, **column 8 lines 63-67, column 9 lines 1-40,**

said method comprising the steps of: applying a voltage of OV to the liquid crystal material in a first period, **figure 9a & b, column 9 lines 1-40**;

and performing a gradation display in a second period, wherein the second period comes before or after the first period, wherein the first period and the second period repeat, **figure 9a & b, column 9 lines 1-40.**

However Nito et al. is silent as to said auxiliary capacitor being connected in series to each of the plurality of thin film transistors and of being connected in parallel to the liquid crystal.

Yamamoto et al. teaches of said capacitor, **figure 21 item LC, column 4 lines 3-28.** Yamamoto et al. teaches of a liquid crystal display as suggested by Nito and therefore the features of Nito are combinable with Yamamoto et al. for the purpose of enhancing the display with features as known in the art. Particularly said capacitor is known for use in ferroelectric matrix addressed display system. **Kogushi et al. further teaches of** an auxiliary capacitor connected in parallel to the liquid crystal for the purpose of positively effecting spontaneous polarization, figure 2 item 201, figure 6 item C, column 3 lines 40-50.

Therefore it would have been obvious to the skilled artisan to provide the capacitor as taught by Yamamoto in the system of Nito and parallel to the liquid crystal as taught by Kogushi because said capacitor is known for use in ferroelectric matrix addressed display system and assists positively with spontaneous polarization, as found in claim 12.

As in claim 13, Nito et al. teaches of, wherein a transmittance of the liquid crystal material is uniquely determined when voltages having a same absolute value and opposite polarities are applied thereto, figure 9(b).

As in claim 14, Nito el al. teaches of, wherein the liquid crystal material has a same tilt angle when voltages having a same absolute value and opposite polarities are applied thereto, figure 9(b).

As in claim 15, Nito et al. teaches of wherein the liquid crystal display material has a chiral smectic phase, column 3 lines 5-10.

7. Claims 12, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartman (4976515) in view of Kogushi et al. (5598284).

As in claim 12, Hartmann teaches of a method of driving a liquid crystal display device, **figure 1 and 7**,

said liquid crystal display device including: a plurality of thin film transistors being provided over a substrate, **figure 7 item 15**;

an auxiliary capacitor being connected in series to each of the plurality of thin film transistors, **figure 7 item 25**; wherein said display element 25 is also a capacitor.

an orientation film over each of the plurality of thin film transistors, **figure 1 item 6**;

and a liquid crystal material over the orientation film, **figure 1 item 2**,

said liquid crystal material over the orientation film, said liquid crystal material having a spontaneous polarization, **column 3 lines 20-25**,

wherein a brightness of said liquid crystal material increases monotonically according to a voltage value applied to said liquid crystal, **figure 3a and 3b,**

said method comprising the steps of: applying a voltage of OV to the liquid crystal material in a first period, **figure 3a item Vbl, figure 4b wherein -6V < Vbl < OV**;

and performing a gradation display in a second period, wherein the second period comes before or after the first period, wherein the first period and the second period repeat, **figure 3a item V1 or V2.**

However Hartman fails to teach of said auxiliary capacitor.

Kogushi et al. further teaches of an auxiliary capacitor connected in parallel to the liquid crystal for the purpose of positively effecting spontaneous polarization, figure 2 item 201, figure 6 item C, column 3 lines 40-50.

Therefore it would have been obvious to the skilled artisan to provide the capacitor as taught by Kogushi et al. in the system of Hartamn parallel to the liquid crystal as taught by Kogushi because said capacitor is known for use in ferroelectric matrix addressed display system as taught by Kogushi and assists positively with spontaneous polarization, as found in claim 12.

As in claim 13, Hartmann teaches of, wherein a transmittance of the liquid crystal material is uniquely determined When voltages having a same absolute value and opposite polarities are applied thereto, figure 4a, wherein Vd is 6v and Vhl is -6V.

As in claim 15, Hartmann teaches of , wherein the liquid crystal material has a chiral smectic CF phase, column 3 lines 20-25, figure 1 item 2.

8. Claims 7-9, 11, 16, 20-22, 24, 25, 29-31, 33, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nito e al. (5214523) in view of Saishu et at. (6069600).

As in claims 7-9, 16, 20-22, 25, 29-31, and 34, Nito et al. teaches of the invention as applied to claims 1-3 and 12, however Nito is silent as to said combination of varying spontaneous polarization of the liquid crystal material being of a specific value and orientation film thickness.

Saishu et al. teaches of varying spontaneous polarization of the liquid crystal material, column 9 lines 15-25, column 12 lines 55-60, further wherein said varying orientation film thickness would have been an obvious design choice in view of the range of values suggested by Saishu, further wherein said thickness values also represent obvious design choice thickness values available to the skilled artisan.

As in claims 11, 24, and 33, Saishu et al. teaches of the auxiliary capacitor well known in the art that Nito et al. is silent on, column 9 lines 15-25, column 12 lines 55-60.

Therefore it would have been obvious to the skilled artisan at the time of the invention to adapt said varying polarization and thickness values as suggested by Saishu in the device as suggested by Nito because both Nito and Saishu teaches of a drive technique an active matrix type liquid crystal display, as found in the above claims.

9. Claims 6, 19, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nito (5214523).

As in claims 6, 19, and 28, Nito teaches of, wherein the upper limit of the voltage has an absolute value of 7 V or less, table 1, column 9 lines 25-40, wherein 11.1v is sufficiently close to 7v and would have been an obvious design choice.

Response to Arguments

10. Applicant's arguments filed on 4/17//2006 have been fully considered but they are not persuasive. Hartman teaches of a material having a chiral smectic phase as is known. From the viewpoint of the liquid crystal structure, ferroelectric liquid crystals belong to the chiral smectic C phase given its bistable state functioning

and corresponding switching states that produce the phase of alignment. Further Nito et al. teaches of a material having a chiral smectic phase as also known contrary to the Applicants assertions, column 3 lines 5-10, column 4 lines 19-20. Applicant argues Hartman fails to cancel out spontaneous polarization of the liquid crystal. As shown in figure 3a item Vbl and figure 4b item Vbl, when the value of Vb is chosen to be –6V in a first period there is no transmission and therefore no spontaneous polarization. Applicant argues the variable Vbl cannot be a voltage of 0V as recited in claim 3. Figure 3a illustrates the voltage value going from 0V to Vbl. Applicant argues the prior art of record lacks the parallel configuration. As in claim 12 Kogushi et al. further teaches of an auxiliary capacitor connected in parallel to the liquid crystal for the purpose of positively effecting spontaneous polarization, figure 2 item 201, figure 6 item C, column 3 lines 40-50, which would be the reason to provide for said feature in Nito in view of Yamamoto. Rejection maintained.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a

first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David L. Lewis** whose telephone number is **(571) 272-7673**. The examiner can normally be reached on MT and THF from 8 to 5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached on **(571) 272-7681**. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571)-273-8300.

13. Please note that all future correspondences directed to David L. Lewis must be sent to Art Unit 2629.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: David L. Lewis

July 10, 2006

BIPIN SHALWALA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600